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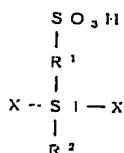
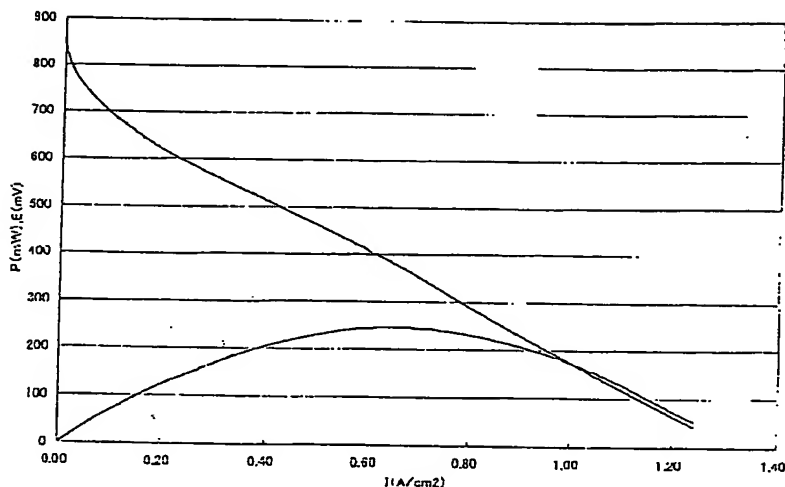
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(81) 指定国 (表示のない限り、全ての種類の国内保護が可能): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,

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(54) Title: PROTON CONDUCTING FILM, METHOD FOR PRODUCING THE SAME, AND FUEL CELL USING THE SAME

(54) 発明の名称: プロトン伝導性膜、その製造方法及びそれを用いた燃料電池



(57) Abstract: A method for producing a proton conducting film which has a crosslinking structure with silicon-oxygen covalent bonds and has, in the film, a crosslinking structure containing a sulfonic acid group, represented by the following formula: (1), characterized in that it comprises a first step of preparing a mixture comprising a mercapto group containing oligomer (A) which contains a plurality of mercapto groups and has a reactive group capable of forming an Si-O-Si bonding through a condensation reaction, a second step of shaping said mixture into a film form, a third step of effecting the condensation reaction of the mixture in a film form in the presence of a catalyst, to form a crosslinked gel, and a forth step of converting the mercapto group in the film to a sulfonic acid group by oxidation; a proton conducting film produced by the method; and a solid polymer type fuel cell using the proton conducting film. The proton conducting film exhibits high ion conductivity, is excellent in dimensional stability at a high temperature, and is capable of functioning with stability even at a high temperature.

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## INTERNATIONAL SEARCH REPORT

International application No.

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## A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> H01B1/00-1/24, 13/00, H01M8/02, C08G77/00-77/62

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1926-1996	Jitsuyo Shinan Toroku Koho	1996-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Toroku Jitsuyo Shinan Koho	1994-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-184427 A (Japan Science and Technology Corp.), 28 June, 2002 (28.06.02), (Family: none)	1-36
P,A	JP 2003-331644 A (Sekisui Chemical Co., Ltd.), 21 November, 2003 (21.11.03), (Family: none)	1-36

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

\* Special categories of cited documents:

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"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search  
23 April, 2004 (23.04.04)Date of mailing of the international search report  
18 May, 2004 (18.05.04)Name and mailing address of the ISA/  
Japanese Patent Office

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